

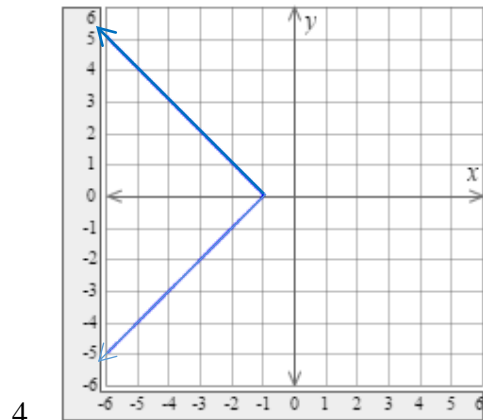
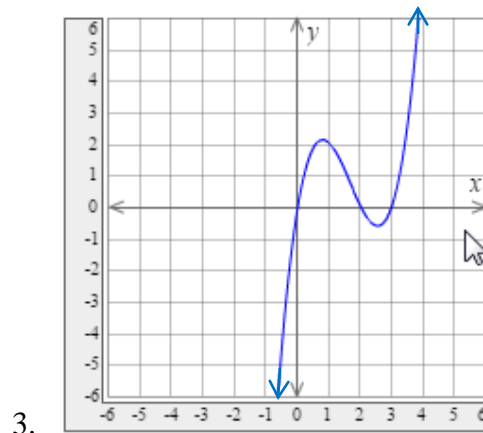
PRACTICE TEST 3 - CHAPTERS 3, 4, 5, 8

Beginning and Intermediate Algebra by Messersmith and Feldman, 4th edition

Identify the domain and range of each relation and determine whether the relation is a function.*For numbers 1 and 2, use set notation to state the domain and the range.**For numbers 3 and 4, use interval notation to state the domain and the range.*

1. $\{(1, 3), (2, 3), (5, 8), (7, 8), (9, 11)\}$

2. $\{(1, 7), (2, 8), (1, 0), (3, 9), (2, 12)\}$



5. Let $f(x) = x^2 - 7x + 5$

a. Find $f(-2)$

b. Find $f(0)$

c. Find $f(4)$

6. Determine if $(-3, -5)$ is a solution to the system:
$$\begin{cases} x - 2y = 7 \\ 2x + 3y = -21 \end{cases}$$

Solve the following systems of linear equations by using the graphing method.

$$7. \begin{cases} y = -4x + 4 \\ y = 2x - 2 \end{cases}$$

$$8. \begin{cases} 16x + 4y = -16 \\ -8x - 2y = 8 \end{cases}$$

Solve the following systems of linear equations by using the substitution method.

$$9. \begin{cases} -x + 2y = 3 \\ -4x + 3y = 2 \end{cases}$$

$$10. \begin{cases} 2x + 3y = 6 \\ y = -\frac{2}{3}x + 4 \end{cases}$$

$$11. \begin{cases} 2x - 5y = -4 \\ 8x - 9y = 6 \end{cases}$$

$$12. \begin{cases} 2y = -x + 2 \\ -6x - 12y = -12 \end{cases}$$

Solve the following systems of linear equations by using the elimination method.

$$13. \begin{cases} 2x - 8y = -4 \\ -2x + 5y = 7 \end{cases}$$

$$14. \begin{cases} 10x - 13y = 46 \\ 5x - 4y = 18 \end{cases}$$

$$15. \begin{cases} -5x + 9y = 16 \\ 20x - 36y = -7 \end{cases}$$

$$16. \begin{cases} 8x - 3y = 18 \\ 5x + 2y = 19 \end{cases}$$

$$17. \begin{cases} -8x - 9y = 4 \\ 24x + 27y = -12 \end{cases}$$

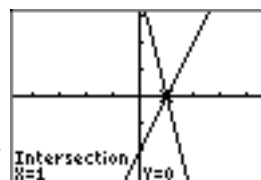
18. Suppose y varies directly as x . If $y = 8$, when $x = \frac{1}{2}$,
- find the constant of variation, k .
 - write the specific variation equation relating y and x .
 - find y when $x = -3$
19. The cost, in dollars, of filling your gas tank is directly proportional to the amount of gasoline purchased. If 20 gallons of gasoline costs \$24, how much would 23 gallons of gasoline cost?
20. If r varies inversely as the cube of h , write the general variation equation using k as the constant of variation.
21. Suppose R varies directly as x^2 and inversely as t .
If $R = 9$ when $x = 3$ and $t = 15$, then find R when $x = 9$ and $t = 8$.
22. Graph the inequality and express the inequality in set notation and in interval notation.
 $x \geq 5$
23. Graph the inequality and express the inequality in interval notation.
 $-10 - 5x \leq 10$
24. Solve the inequality. Write the answer in interval notation.
 $-20 \leq 8x - 4 \leq 20$
25. Solve the inequality. Write the answer in interval notation.
 $2x - 3 > -6$

Solve the inequalities. Graph the solution sets, and write the answers in interval notation.

26. $3n \leq 8$ and $n + 3 \geq 3$
27. $3n - 6 \leq 1$ and $n + 5 \leq 2$
28. $m + 7 \geq 10$ or $6m < -15$
29. $m + 6 \leq 9$ or $\frac{-2}{5}m < -2$
30. $4x - 2 < 22$ and $10x + 2 \geq 9$

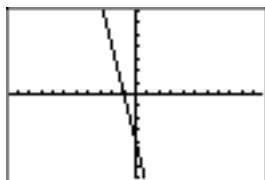
Practice Test 3 Chapter 3, 4, 5, 8 Answers

1. Domain: $\{1, 2, 5, 7, 9\}$ Range: $\{3, 8, 11\}$ The relation is a function.
2. Domain: $\{1, 2, 3\}$ Range: $\{0, 7, 8, 9, 12\}$ The relation is not a function.
3. Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$ The relation is a function.
4. Domain: $(-\infty, -1]$ Range: $(-\infty, \infty)$ The relation is not a function.
5. a) 23 b) 5 c) -7
6. Yes



7. The system is consistent and independent. The solution is $(1, 0)$.
8. The system is consistent and dependent. There are an infinite number of solutions of the form

$$\{(x, y) \mid 16x + 4y = -16\}$$



9. $(1, 2)$
10. \emptyset
11. $(3, 2)$
12. Infinite number of solutions of the form $\{(x, y) \mid x + 2y = 2\}$
13. $(-6, -1)$
14. $(2, -2)$
15. \emptyset
16. $(3, 2)$
17. Infinite number of solutions of the form $\{(x, y) \mid -8x - 9y = 4\}$
18. a) $k = 16$ b) $y = 16x$ c) $y = -48$
19. \$27.60
20. $r = \frac{k}{h^3}$
21. $R = \frac{1215}{8}$

22. $\{x \mid x \geq 5\}$ $[5, \infty)$



23. $[-4, \infty)$



24. $[-2, 3]$



25. $\left(-\frac{3}{2}, \infty\right)$



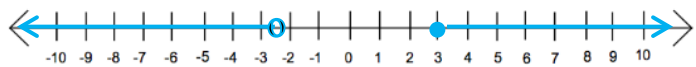
26. $\left[0, \frac{8}{3}\right]$



27. $(-\infty, -3]$



28. $\left(-\infty, -\frac{5}{2}\right) \cup [3, \infty)$



29. $(-\infty, 3] \cup (5, \infty)$



30. $\left[\frac{7}{10}, 6\right)$

